



Title: G Proteins, Polynucleotide Encoding the Same and Utilization Thereof

Inventor: Y. Takahashi, *et al.*

Customer No.: 570 Sequence Listing

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SEQUENCE LISTING

<110> Sumitomo Chemical Company Limited

<120> NOVEL G PROTEINS, POLYNUCLEOTIDE ENCODING THE SAME AND UTILIZATION THEREOF

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<150> JP 2002/206841

<151> 2002-07-16

<150> JP 2002/367778

<151> 2002-12-19

<150> JP 2003/095955

<151> 2003-03-31

<160> 34

<210> 1

<211> 458

<212> PRT

<213> Homo sapiens

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Ala Pro Ala Pro Ala Leu Ala Pro Val Arg Ala Ala Arg Asp Thr
35 40 45
Ala Arg Thr Leu Leu Pro Arg Gly Gly Glu Gly Ser Pro Ala Cys Ala
50 55 60
Arg Pro Lys Ala Asp Lys Pro Lys Glu Lys Arg Gln Arg Thr Glu Gln
65 70 75 80
Leu Ser Ala Glu Glu Arg Glu Ala Ala Lys Glu Arg Glu Ala Val Lys
85 90 95
Glu Ala Arg Lys Val Ser Arg Gly Ile Asp Arg Met Leu Arg Asp Gln
100 105 110
Lys Arg Asp Leu Gln Gln Thr His Arg Leu Leu Leu Leu Gly Ala Gly
115 120 125
Glu Ser Gly Lys Ser Thr Ile Val Lys Gln Met Arg Ile Leu His Val
130 135 140
Asn Gly Phe Asn Pro Glu Glu Lys Lys Gln Lys Ile Leu Asp Ile Arg
145 150 155 160
Lys Asn Val Lys Asp Ala Ile Val Thr Ile Val Ser Ala Met Ser Thr
165 170 175
Ile Ile Pro Pro Val Pro Leu Ala Asn Pro Glu Asn Gln Phe Arg Ser
180 185 190
Asp Tyr Ile Lys Ser Ile Ala Pro Ile Thr Asp Phe Glu Tyr Ser Gln
195 200 205
Glu Phe Phe Asp His Val Lys Lys Leu Trp Asp Asp Glu Gly Val Lys
210 215 220
Ala Cys Phe Glu Arg Ser Asn Glu Tyr Gln Leu Ile Asp Cys Ala Gln
225 230 235 240
Tyr Phe Leu Glu Arg Ile Asp Ser Val Ser Leu Val Asp Tyr Thr Pro
245 250 255
Thr Asp Gln Asp Leu Leu Arg Cys Arg Val Leu Thr Ser Gly Ile Phe
260 265 270
Glu Thr Arg Phe Gln Val Asp Lys Val Asn Phe His Met Phe Asp Val
275 280 285
Gly Gly Gln Arg Asp Glu Arg Arg Lys Trp Ile Gln Cys Phe Asn Asp
290 295 300

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Val Thr Ala Ile Ile Tyr Val Ala Ala Cys Ser Ser Tyr Asn Met Val
 305 310 315 320
 Ile Arg Glu Asp Asn Asn Thr Asn Arg Leu Arg Glu Ser Leu Asp Leu
 325 330 335
 Phe Glu Ser Ile Trp Asn Asn Arg Trp Leu Arg Thr Ile Ser Ile Ile
 340 345 350
 Leu Phe Leu Asn Lys Gln Asp Met Leu Ala Glu Lys Val Leu Ala Gly
 355 360 365
 Lys Ser Lys Ile Glu Asp Tyr Phe Pro Glu Tyr Ala Asn Tyr Thr Val
 370 375 380
 Pro Glu Asp Ala Thr Pro Asp Ala Gly Glu Asp Pro Lys Val Thr Arg
 385 390 395 400
 Ala Lys Phe Phe Ile Arg Asp Leu Phe Leu Arg Ile Ser Thr Ala Thr
 405 410 415
 Gly Asp Gly Lys His Tyr Cys Tyr Pro His Phe Thr Cys Ala Val Asp
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 Arg Met His Leu Lys Gln Tyr Glu Leu Leu
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<220>
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 <222> (1)..(1377)

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 gac gac ccc tgc gcg gcc tcg gag ccg ccg gtg gag gac gcg cag ccc 96
 Asp Asp Pro Cys Ala Ala Ser Glu Pro Pro Val Glu Asp Ala Gln Pro
 20 25 30
 gcc ccg gcc ccg gcc ctg gcc cca gtc cgg gcg gcc gca agg gac acg 144
 Ala Pro Ala Pro Ala Leu Ala Pro Val Arg Ala Ala Ala Arg Asp Thr
 35 40 45
 gcc ccg acc ctg ctc cct cgg ggc ggc gaa ggg agc ccg gca tgc gct 192
 Ala Arg Thr Leu Leu Pro Arg Gly Gly Glu Gly Ser Pro Ala Cys Ala
 50 55 60
 cgg ccc aaa gca gac aag ccg aag gag aag ccg cag cgc acc gag cag 240
 Arg Pro Lys Ala Asp Lys Pro Lys Glu Lys Arg Gln Arg Thr Glu Gln
 65 70 75 80
 ctg agt gcc gag gag cgc gag gcg gcc aag gag cgc gag gcg gtc aag 288
 Leu Ser Ala Glu Glu Arg Glu Ala Ala Lys Glu Arg Glu Ala Val Lys
 85 90 95
 gag gcg agg aaa gtg agc cgg ggc atc gac cgc atg ctg cgc gac cag 336
 Glu Ala Arg Lys Val Ser Arg Gly Ile Asp Arg Met Leu Arg Asp Gln
 100 105 110
 aag cgc gac ctg cag cag acg cac cgg ctc ctg ctg ctc ggg gct ggt 384
 Lys Arg Asp Leu Gln Gln Thr His Arg Leu Leu Leu Leu Gly Ala Gly
 115 120 125

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gag Glu	tct Ser	ggg Gly	aaa Lys	agc Ser	acc Thr	atc Ile	gtc Val	aaa Lys	cag Gln	atg Met	agg Arg	atc Ile	ctg Leu	cac His	gtc Val	432
130						135					140					
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145					150					155					160	
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gac Asp	tac Tyr	atc Ile	aag Lys	agc Ser	ata Ile	gcc Ala	cct Pro	atc Ile	act Thr	gac Asp	ttt Phe	gaa Glu	tat Tyr	tcc Ser	cag Gln	624
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gaa Glu	ttc Phe	ttt Phe	gac Asp	cat His	gtg Val	aaa Lys	aaa Lys	ctt Leu	tgg Trp	gac Asp	gat Asp	gaa Glu	ggc Gly	gtg Val	aag Lys	672
	210					215					220					
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225					230					235					240	
tac Tyr	ttc Phe	ctg Leu	gaa Glu	aga Arg	atc Ile	gac Asp	agc Ser	gtc Val	agc Ser	ttg Leu	gtt Val	gac Asp	tac Tyr	aca Thr	ccc Pro	768
				245					250					255		
aca Thr	gac Asp	cag Gln	gac Asp	ctc Leu	ctc Leu	aga Arg	tgc Cys	aga Arg	gtt Val	ctg Leu	aca Thr	tct Ser	ggg Gly	att Ile	ttt Phe	816
			260					265					270			
gag Glu	aca Thr	cga Arg	ttc Phe	caa Gln	gtg Val	gac Asp	aaa Lys	gta Val	aac Asn	ttc Phe	cac His	atg Met	ttt Phe	gat Asp	gtt Val	864
		275					280					285				
ggg Gly	ggc Gly	cag Gln	agg Arg	gat Asp	gag Glu	agg Arg	aga Lys	aaa Lys	tgg Trp	atc Ile	cag Gln	tgc Cys	ttt Phe	aac Asn	gat Asp	912
	290					295					300					
gtc Val	aca Thr	gct Ala	atc Ile	att Ile	tac Tyr	gtc Val	gca Ala	gcc Ala	tgc Cys	agt Ser	agc Ser	tac Tyr	aac Asn	atg Met	gtg Val	960
305					310					315					320	
att Ile	cga Arg	gaa Glu	gat Asp	aac Asn	aac Asn	acc Thr	aac Asn	agg Arg	ctg Leu	aga Arg	gag Glu	tcc Ser	ctg Leu	gat Asp	ctt Leu	1008
				325					330					335		
ttt Phe	gaa Glu	agc Ser	atc Ile	tgg Trp	aac Asn	aac Asn	agg Arg	tgg Trp	tta Leu	cgg Arg	acc Thr	att Ile	tct Ser	atc Ile	atc Ile	1056
			340					345					350			
ttg Leu	ttc Phe	ttg Leu	aac Asn	aaa Lys	caa Gln	gat Asp	atg Met	ctg Leu	gca Ala	gaa Glu	aaa Lys	gtc Val	ttg Leu	gca Ala	ggg Gly	1104
		355					360					365				
aaa Lys	tca Ser	aaa Lys	att Ile	gaa Glu	gac Asp	tat Tyr	ttc Phe	cca Pro	gaa Glu	tat Tyr	gca Ala	aat Asn	tat Tyr	act Thr	gtt Val	1152
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cct gaa gac gca aca cca gat gca gga gaa gat ccc aaa gtt aca aga 1200
Pro Glu Asp Ala Thr Pro Asp Ala Gly Glu Asp Pro Lys Val Thr Arg
385 390 395 400

gcc aag ttc ttt atc cgg gac ctg ttt ttg agg atc agc acg gcc acc 1248
Ala Lys Phe Phe Ile Arg Asp Leu Phe Leu Arg Ile Ser Thr Ala Thr
405 410 415

ggt gac ggc aaa cat tac tgc tac ccg cac ttc acc tgc gcc gtg gac 1296
Gly Asp Gly Lys His Tyr Cys Tyr Pro His Phe Thr Cys Ala Val Asp
420 425 430

aca gag aac atc cgc agg gtg ttc aac gac tgc cgc gac atc atc cag 1344
Thr Glu Asn Ile Arg Arg Val Phe Asn Asp Cys Arg Asp Ile Ile Gln
435 440 445

cgg atg cac ctc aag cag tat gag ctc ttg tga 1377
Arg Met His Leu Lys Gln Tyr Glu Leu Leu
450 455

<210> 3
<211> 44
<212> RNA
<213> artificial sequence

<220>
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<210> 4
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<212> RNA
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<223> an example of the ribozyme of the present invention.

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<212> RNA
<213> artificial sequence

<220>
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<212> RNA
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<223> an example of the ribozyme of the present invention

<400> 6

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ucgccuccuu agaagccuac cagagaaaca cacguugugg uauauuaccu ggua 54

<210> 7
 <211> 54
 <212> RNA
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<220>
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<210> 8
 <211> 55
 <212> RNA
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<210> 9
 <211> 24
 <212> DNA
 <213> artificial sequence

<220>
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<210> 10
 <211> 37
 <212> DNA
 <213> artificial sequence

<220>
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<210> 11
 <211> 24
 <212> DNA
 <213> artificial sequence

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<400> 11
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<210> 12
 <211> 21
 <212> DNA
 <213> artificial sequence

<220>

<223> a primer used in an example of the present invention

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<210> 13
<211> 22
<212> DNA
<213> artificial sequence

<220>
<223> a primer used in an example of the present invention

<400> 13
atggggtggtt tgggcggcaa ca 22

<210> 14
<211> 37
<212> DNA
<213> artificial sequence

<220>
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<211> 29
<212> DNA
<213> artificial sequence

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<210> 16
<211> 36
<212> DNA
<213> artificial sequence

<220>
<223> a primer used in an example of the present invention

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<210> 17
<211> 36
<212> DNA
<213> artificial sequence

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<210> 18
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<212> DNA
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<211> 41
<212> DNA
<213> artificial sequence

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<223> a primer used in an example of the present invention

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<213> artificial sequence

<220>

<223> a primer used in an example of the present invention

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<210> 23
<211> 25
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<213> artificial sequence

<220>

<223> a primer used in an example of the present invention

<400> 23
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<210> 24
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<220>
 <223> a primer used in an example of the present invention

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24

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 <211> 448
 <212> PRT
 <213> Mus musculus

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 Ser Ala Ala Pro Ala Pro Ala Ser Ile Pro Ala Pro Ala Pro Val Gly
 35 40 45
 Thr Leu Leu Arg Arg Gly Gly Arg Ile Val Ala Asn Ala Arg Pro
 50 55 60
 Pro Gly Glu Leu Gln Ser Arg Arg Arg Gln Glu Gln Leu Arg Ala Glu
 65 70 75 80
 Glu Arg Glu Ala Ala Lys Glu Ala Arg Lys Val Ser Arg Gly Ile Asp
 85 90 95
 Arg Met Leu Arg Glu Gln Lys Arg Asp Leu Gln Gln Thr His Arg Leu
 100 105 110
 Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Ile Val Lys Gln
 115 120 125
 Met Arg Ile Leu His Val Asn Gly Phe Asn Pro Glu Glu Lys Lys Gln
 130 135 140
 Lys Ile Leu Asp Ile Arg Lys Asn Val Lys Asp Ala Ile Val Thr Ile
 145 150 155 160
 Val Ser Ala Met Ser Thr Ile Ile Pro Pro Val Pro Leu Ala Asn Pro
 165 170 175
 Glu Asn Gln Phe Arg Ser Asp Tyr Ile Lys Ser Ile Ala Pro Ile Thr
 180 185 190
 Asp Phe Glu Tyr Ser Gln Glu Phe Asp His Val Lys Lys Leu Trp
 195 200 205
 Asp Asp Glu Gly Val Lys Ala Cys Phe Glu Arg Ser Asn Glu Tyr Gln
 210 215 220
 Leu Ile Asp Cys Ala Gln Tyr Phe Leu Glu Arg Ile Asp Ser Val Ser
 225 230 235 240
 Leu Val Asp Tyr Thr Pro Thr Asp Gln Asp Leu Leu Arg Cys Arg Val
 245 250 255
 Leu Thr Ser Gly Ile Phe Glu Thr Arg Phe Gln Val Asp Lys Val Asn
 260 265 270
 Phe His Met Phe Asp Val Gly Gly Gln Arg Asp Glu Arg Arg Lys Trp
 275 280 285
 Ile Gln Cys Phe Asn Asp Val Thr Ala Ile Ile Tyr Val Ala Ala Cys
 290 295 300
 Ser Ser Tyr Asn Met Val Ile Arg Glu Asp Asn Asn Thr Asn Arg Leu
 305 310 315 320
 Arg Glu Ser Leu Asp Leu Phe Glu Ser Ile Trp Asn Asn Arg Trp Leu
 325 330 335
 Arg Thr Ile Ser Ile Ile Leu Phe Leu Asn Lys Gln Asp Met Leu Ala
 340 345 350
 Glu Lys Val Leu Ala Gly Lys Ser Lys Ile Glu Asp Tyr Phe Pro Glu
 355 360 365

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Tyr Ala Asn Tyr Thr Val Pro Glu Asp Ala Thr Pro Asp Ala Gly Glu
 370 375 380
 Asp Pro Lys Val Thr Arg Ala Lys Phe Phe Ile Arg Asp Leu Phe Leu
 385 390 395 400
 Arg Ile Ser Thr Ala Thr Gly Asp Gly Lys His Tyr Cys Tyr Pro His
 405 410 415
 Phe Thr Cys Ala Val Asp Thr Glu Asn Ile Arg Arg Val Phe Asn Asp
 420 425 430
 Cys Arg Asp Ile Ile Gln Arg Met His Leu Lys Gln Tyr Glu Leu Leu
 435 440 445

<210> 26
 <211> 450
 <212> PRT
 <213> Rattus norvegicus

<400> 26
 Met Gly Leu Cys Tyr Ser Leu Arg Pro Leu Leu Phe Gly Ser Ser Gly
 1 5 10 15
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 20 25 30
 Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ile Pro Ala Pro Ala Pro
 35 40 45
 Val Gly Thr Leu Leu Arg Arg Gly Asp Gly Arg Ile Pro Ala Ser Ala
 50 55 60
 Arg Ser Pro Val Glu Leu Gln Asn Arg Arg Arg Gln Glu Gln Leu Arg
 65 70 75 80
 Ala Glu Glu Arg Glu Ala Ala Lys Glu Ala Arg Lys Val Ser Arg Gly
 85 90 95
 Ile Asp Arg Met Leu Arg Glu Gln Lys Arg Asp Leu Gln Gln Thr His
 100 105 110
 Arg Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Ile Val
 115 120 125
 Lys Gln Met Arg Ile Leu His Val Asn Gly Phe Asn Pro Glu Glu Lys
 130 135 140
 Lys Gln Lys Ile Leu Asp Ile Arg Lys Asn Val Lys Asp Ala Leu Val
 145 150 155 160
 Thr Ile Ile Ser Ala Met Ser Thr Ile Ile Pro Pro Val Pro Leu Ala
 165 170 175
 Asn Pro Glu Asn Gln Phe Arg Ser Asp Tyr Ile Lys Ser Ile Ala Pro
 180 185 190
 Ile Thr Asp Phe Glu Tyr Ser Gln Glu Phe Phe Asp His Val Lys Lys
 195 200 205
 Leu Trp Asp Asp Glu Gly Val Lys Ala Cys Phe Glu Arg Ser Asn Glu
 210 215 220
 Tyr Gln Leu Ile Asp Cys Ala Gln Tyr Phe Leu Glu Arg Ile Asp Ser
 225 230 235 240
 Val Ser Leu Val Asp Tyr Thr Pro Thr Asp Gln Asp Leu Leu Arg Cys
 245 250 255
 Arg Val Leu Thr Ser Gly Ile Phe Glu Thr Arg Phe Gln Val Asp Lys
 260 265 270
 Val Asn Phe His Met Phe Asp Val Gly Gly Gln Arg Asp Glu Arg Arg
 275 280 285
 Lys Trp Ile Gln Cys Phe Asn Asp Val Thr Ala Ile Tyr Val Ala
 290 295 300
 Ala Cys Ser Ser Tyr Asn Met Val Ile Arg Glu Asp Asn Asn Thr Asn
 305 310 315 320
 Arg Leu Arg Glu Ser Leu Asp Leu Phe Glu Ser Ile Trp Asn Asn Arg
 325 330 335
 Trp Leu Arg Thr Ile Ser Ile Ile Leu Phe Leu Asn Lys Gln Asp Met
 340 345 350
 Leu Ala Glu Lys Val Leu Ala Gly Lys Ser Lys Ile Glu Asp Tyr Phe
 355 360 365

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Pro	Glu	Tyr	Ala	Asn	Tyr	Thr	Val	Pro	Glu	Asp	Ala	Thr	Pro	Asp	Ala
	370					375					380				
Gly	Glu	Asp	Pro	Lys	Val	Thr	Arg	Ala	Lys	Phe	Phe	Ile	Arg	Asp	Leu
385					390					395					400
Phe	Leu	Arg	Ile	Ser	Thr	Ala	Thr	Gly	Asp	Gly	Lys	His	Tyr	Cys	Tyr
				405					410					415	
Pro	His	Phe	Thr	Cys	Ala	Val	Asp	Thr	Glu	Asn	Ile	Arg	Arg	Val	Phe
			420					425					430		
Asn	Asp	Cys	Arg	Asp	Ile	Ile	Gln	Arg	Met	His	Leu	Lys	Gln	Tyr	Glu
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Leu	Leu														
	450														

<210> 27
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 <212> DNA
 <213> Mus musculus

<220>
 <221> CDS
 <222> (1)..(1347)

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gac acc ccg tgt gcg gcc tcg gaa ccc tgc gca gag gat gct cag ccc	96
Asp Thr Pro Cys Ala Ala Ser Glu Pro Cys Ala Glu Asp Ala Gln Pro	
20 25 30	
agc gcc gcc ccg gcc cct gcc tcg atc cca gcc ccg gct ccc gta ggg	144
Ser Ala Ala Pro Ala Pro Ala Ser Ile Pro Ala Pro Ala Pro Val Gly	
35 40 45	
acc ctg ctc ccg cgt ggc ggc ggc ccg atc gtc gcg aac gcg ccg ccg	192
Thr Leu Leu Arg Arg Gly Gly Gly Arg Ile Val Ala Asn Ala Arg Pro	
50 55 60	
cca ggc gag ctg cag agc cgc ccg cga cag gag cag cta cga gcc gag	240
Pro Gly Glu Leu Gln Ser Arg Arg Arg Gln Glu Gln Leu Arg Ala Glu	
65 70 75 80	
gag cgc gag gcg gct aaa gag gcg agg aaa gtc agc ccg ggc atc gac	288
Glu Arg Glu Ala Ala Lys Glu Ala Arg Lys Val Ser Arg Gly Ile Asp	
85 90 95	
cgc atg ctg cgc gag cag aag ccg gac ctg cag cag acg cac ccg ctc	336
Arg Met Leu Arg Glu Gln Lys Arg Asp Leu Gln Gln Thr His Arg Leu	
100 105 110	
ctg ctg ctg ggg gct ggt gag tcc ggg aaa agc act atc gtc aaa cag	384
Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Ile Val Lys Gln	
115 120 125	
atg agg atc ctg cac gtc aat ggc ttc aac ccc gag gaa aag aag cag	432
Met Arg Ile Leu His Val Asn Gly Phe Asn Pro Glu Glu Lys Lys Gln	
130 135 140	
aaa att ctg gac atc agg aaa aat gtc aaa gat gcg atc gtg aca atc	480
Lys Ile Leu Asp Ile Arg Lys Asn Val Lys Asp Ala Ile Val Thr Ile	
145 150 155 160	

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gtt	tca	gca	atg	agt	act	atc	ata	cct	cca	ggt	cca	ctg	gcc	aac	cct	528
Val	Ser	Ala	Met	Ser	Thr	Ile	Ile	Pro	Pro	Val	Pro	Leu	Ala	Asn	Pro	
				165					170					175		
gag	aac	cag	ttc	cgg	tca	gat	tat	atc	aag	agc	ata	gcc	cct	atc	act	576
Glu	Asn	Gln	Phe	Arg	Ser	Asp	Tyr	Ile	Lys	Ser	Ile	Ala	Pro	Ile	Thr	
			180					185					190			
gac	ttt	gaa	tat	tcc	cag	gag	ttc	ttt	gac	cat	gtg	aag	aag	ctg	tg	624
Asp	Phe	Glu	Tyr	Ser	Gln	Glu	Phe	Phe	Asp	His	Val	Lys	Lys	Leu	Trp	
		195					200					205				
gac	gat	gaa	gga	gtg	aag	gcc	tgc	ttt	gag	aga	tcc	aac	gag	tac	cag	672
Asp	Asp	Glu	Gly	Val	Lys	Ala	Cys	Phe	Glu	Arg	Ser	Asn	Glu	Tyr	Gln	
	210					215					220					
ctg	atc	gac	tgt	gca	caa	tac	ttc	ctg	gaa	agg	att	gac	agt	gtc	agt	720
Leu	Ile	Asp	Cys	Ala	Gln	Tyr	Phe	Leu	Glu	Arg	Ile	Asp	Ser	Val	Ser	
225					230					235					240	
ctg	gtt	gac	tac	aca	ccc	aca	gac	cag	gac	ctg	ctc	aga	tgc	aga	gtg	768
Leu	Val	Asp	Tyr	Thr	Pro	Thr	Asp	Gln	Asp	Leu	Leu	Arg	Cys	Arg	Val	
				245					250					255		
ctg	aca	tca	gga	atc	ttt	gag	aca	cga	ttc	caa	gtg	gac	aaa	gtg	aac	816
Leu	Thr	Ser	Gly	Ile	Phe	Glu	Thr	Arg	Phe	Gln	Val	Asp	Lys	Val	Asn	
			260					265					270			
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Phe	His	Met	Phe	Asp	Val	Gly	Gly	Gln	Arg	Asp	Glu	Arg	Arg	Lys	Trp	
		275					280					285				
atc	cag	tgt	ttt	aat	gat	gtc	act	gcg	atc	att	tac	gtg	gcg	gcc	tgt	912
Ile	Gln	Cys	Phe	Asn	Asp	Val	Thr	Ala	Ile	Ile	Tyr	Val	Ala	Ala	Cys	
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Ser	Ser	Tyr	Asn	Met	Val	Ile	Arg	Glu	Asp	Asn	Asn	Thr	Asn	Arg	Leu	
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Glu	Lys	Val	Leu	Ala	Gly	Lys	Ser	Lys	Ile	Glu	Asp	Tyr	Phe	Pro	Glu	
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tat	gcc	aat	tat	act	gtc	cct	gaa	gat	gca	aca	cca	gat	gcg	gga	gaa	1152
Tyr	Ala	Asn	Tyr	Thr	Val	Pro	Glu	Asp	Ala	Thr	Pro	Asp	Ala	Gly	Glu	
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gat	ccc	aaa	gtt	aca	aga	gca	aag	ttc	ttt	atc	cgg	gat	ctg	ttc	ttg	1200
Asp	Pro	Lys	Val	Thr	Arg	Ala	Lys	Phe	Phe	Ile	Arg	Asp	Leu	Phe	Leu	
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agg	atc	agc	aca	gcc	acg	ggg	gat	ggc	aaa	cat	tac	tgc	tac	cct	cac	1248
Arg	Ile	Ser	Thr	Ala	Thr	Gly	Asp	Gly	Lys	His	Tyr	Cys	Tyr	Pro	His	
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Asp Ala Pro Cys Glu Asp Ser Glu Pro Cys Ala Glu Asp Ala Gln Pro	
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Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ile Pro Ala Pro Ala Pro	
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Val Gly Thr Leu Leu Arg Arg Gly Asp Gly Arg Ile Pro Ala Ser Ala	
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Arg Ser Pro Val Glu Leu Gln Asn Arg Arg Arg Gln Glu Gln Leu Arg	
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Ala Glu Glu Arg Glu Ala Ala Lys Glu Ala Arg Lys Val Ser Arg Gly	
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Lys Gln Met Arg Ile Leu His Val Asn Gly Phe Asn Pro Glu Glu Lys	
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Lys Gln Lys Ile Leu Asp Ile Arg Lys Asn Val Lys Asp Ala Leu Val	
145 150 155 160	
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Thr Ile Ile Ser Ala Met Ser Thr Ile Ile Pro Pro Val Pro Leu Ala	

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Ile	Thr	Asp	Phe	Glu	Tyr	Ser	Gln	Glu	Phe	Phe	Asp	His	Val	Lys	Lys	
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Leu	Trp	Asp	Asp	Glu	Gly	Val	Lys	Ala	Cys	Phe	Glu	Arg	Ser	Asn	Glu	
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Val	Ser	Leu	Val	Asp	Tyr	Thr	Pro	Thr	Asp	Gln	Asp	Leu	Leu	Arg	Cys	
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Arg	Val	Leu	Thr	Ser	Gly	Ile	Phe	Glu	Thr	Arg	Phe	Gln	Val	Asp	Lys	
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Val	Asn	Phe	His	Met	Phe	Asp	Val	Gly	Gly	Gln	Arg	Asp	Glu	Arg	Arg	
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Lys	Trp	Ile	Gln	Cys	Phe	Asn	Asp	Val	Thr	Ala	Ile	Ile	Tyr	Val	Ala	
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Gly	Glu	Asp	Pro	Lys	Val	Thr	Arg	Ala	Lys	Phe	Phe	Ile	Arg	Asp	Leu	
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ttc	ttg	agg	atc	agc	aca	gcc	acg	ggg	gat	ggc	aaa	cat	tac	tgc	tac	1248
Phe	Leu	Arg	Ile	Ser	Thr	Ala	Thr	Gly	Asp	Gly	Lys	His	Tyr	Cys	Tyr	
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Pro His Phe Thr Cys Ala Val Asp Thr Glu Asn Ile Arg Arg Val Phe	
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